IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Confirmation No.: 6799
Wachendorff-Neumann *et al.*	Art Unit: 1616
Appl. No.: 10/518,668	Examiner: Qazi, Sabiha Naim
Filed: August 22, 2005	Atty. Docket: 2400.0260001/VLC/L-Z
For: **Fungicidal Combinations of Active Substances**	

Declaration of Peter Dahmen Under 37 C.F.R. §1.132

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

I, <u>Peter Dahmen</u>, of Altebrücker Str. 61, 41470 Neuss, Germany, a citizen

of Germany, hereby declare:

1. that I am a biologist having studied at the University of Bonn, Germany;

2. that I received the degree of Dr. agr. at the University of Bonn, Germany;

3. that I entered the employ of Bayer Aktiengesellschaft, Leverkusen, in

1991, where I have been employed in the department of Biology Herbicides, that after

the spin-off from Bayer CropScience AG I am now employee of this company in the

department of Biology Fungicides;

4. that I have specialized in the field of fungicide research;

5. that the following tests have been carried out under my supervision and

control

- 2 -   Wachendorff-Neumann *et al.*

Reply to Office Action of August 7, 2007   Appl. No. 10/518,668

<u>Examples</u>

A synergistic effect in fungicides is always present when the fungicidal action of

the active compound combinations exceeds the expected action of the active compounds.

The expected fungicidal action for a given combination of two or three active

compounds can be calculated as follows, according to S.R. Colby ("Calculating

Synergistic and Antagonistic Responses of Herbicide Combinations", Weeds 1967, 15,

20-22):

If

X   is the efficacy observed for compound (A) at a defined dose (m g/ha),

Y   is the efficacy observed for compound (B) at a defined dose (n g/ha),

Z   is the efficacy observed for compound (C) at a defined dose (r g/ha),

E_1 is the efficacy observed for compound (A) and compound (B) together at defined

          doses of m and n g/ha,

E_2 is the efficacy observed for compound (A) and compound (B) and compound (C)

          together at defined doses of m, n and r g/ha,

the Colby formula can be defined as shown below for a binary mixture:

$$E_1 = X + Y - \frac{X \cdot Y}{100}$$

and for a ternary mixture:

$$E_2 = X + Y + Z - \left(\frac{X \cdot Y + X \cdot Z + Y \cdot Z}{100} \right) + \frac{X \cdot Y \cdot Z}{10000}$$

Here, the efficacy is determined in %. 0 % means an efficacy which corresponds

to that of the control, whereas an efficacy of 100 % means that no infection is observed.

- 3 -

Reply to Office Action of August 7, 2007

Wachendorff-Neumann *et al.*
Appl. No. 10/518,668

If the actual fungicidal action exceeds the calculated value, the action of the combination is super-additive, i.e. a synergistic effect is present. In this case, the actually observed efficacy must exceed the value calculated using the above formula for the expected efficacy (E_1 and/or E_2)

Example 1: *Blumeria graminis* test (wheat) / preventive

Solvent: 50   parts by weight of N,N-dimethyl acetamide

Emulsifier: 1   part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound or active compound combination at the stated rate of application. After the spray coating has been dried, the plants are dusted with spores of *Blumeria graminis f.sp. tritici.* The plants are placed in a greenhouse at a temperature of approximately 20°C and a relative atmospheric humidity of approximately 80% to promote the development of mildew pustules.

The test is evaluated 7 days after the inoculation. 0% means an efficacy which corresponds to that of the control, while an efficacy of 100% means that no disease is observed.

- 4 -

Wachendorff-Neumann *et al.*
Appl. No. 10/518,668

Reply to Office Action of August 7, 2007

Table 1: *Blumeria graminis* test (wheat) / preventive

Active compounds/combination	Application rate of active compound in ppm	Efficacy in %	
		found	calc.*
(I) Trifloxystrobin	12,5	25	
(II) Prothioconazole	12,5	38	
(III) Fluoxastrobin	25	0	
(I) + (II) + (III) 1:1:2	12,5 + 12,5+ 25	88	53

*   calculated according to Colby's formula

Example 2: *Blumeria graminis* test (wheat) / curative

Solvent: 25   parts by weight of N,N-dimethyl acetamide

Emulsifier: 0,6   parts by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration, or a commercial formulation of active compound or active compound combination is diluted with water to the desired concentration.

To test for curative activity, young plants are dusted with spores of *Blumeria graminis f sp. tritici*. 48 hours after the inoculation the plants are sprayed with the active compound preparation at the stated application rate. The plants are placed in a green-house at a temperature of about 20°C and a relative atmospheric humidity of about 80 %, to foster the development of mildew pustules

Evaluation is carried out 8 days after the inoculation. 0 % means an efficacy

which corresponds to that of the control, whereas an efficacy of 100 % means that no

infection is observed.

Table 2: *Blumeria graminis* test (wheat) / curative

Active compounds/combination	Application rate of active compound in ppm	Efficacy in %	
		found	calc.*
(I) Trifloxystrobin	50	75	
(II) Prothioconazole	100	88	
(III) Fluoxastrobin	50	38	
(I) + (II) + (III) 1:2:1	50 + 100 + 50	100	98

*   calculated according to Colby's formula

Example 3: *Leptosphaeria nodorum* test (wheat) / preventive

Solvent: 50   parts by weight of N,N-dimethyl acetamide

Emulsifier: 1   part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active

compound or active compound combination is mixed with the stated amounts of solvent

and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with a preparation of ac-

tive compound or active compound combination at the stated rate of application. After the

spray coating has been dried, the plants are sprayed with a spore suspension of *Lepto-*

sphaeria nodorum. The plants remain for 48 hours in an incubation cabinet at 20°C and a

relative atmospheric humidity of 100 %. The plants are placed in a greenhouse at a temp-

erature of approximately 15°C and a relative atmospheric humidity of approximately 80 %.

The test is evaluated 10 days after the inoculation. 0 % means an efficacy which corresponds to that of the control, while an efficacy of 100 % means that no disease is observed.

Table 3: *Leptosphaeria nodorum* test (wheat) / preventive

Active compounds/combination	Application rate of active compound in ppm	Efficacy in %	
		found	calc *
(I) Trifloxystrobin	50	29	
(II) Prothioconazole	50	0	
(III) Fluoxistrobin	100	0	
(I) + (II) + (III) 1:1:2	50 + 50+ 100	86	29

*   calculated according to Colby's formula

The undersigned declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed at Monheim, Germany,

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October 22, 2007   Dr. Peter Dahmen

Atty. Dkt. No. 2400/0260001/VLC/L-Z